(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
27 January 2005 (27.01.2005)

PCT

(10) International Publication Number
WO 2005/008286 A3

(51) International Patent Classification[7]: G01T 1/24

(21) International Application Number:
PCT/GB2004/002980

(22) International Filing Date: 9 July 2004 (09.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0316372.2 12 July 2003 (12.07.2003) GB
0403513.5 18 February 2004 (18.02.2004) GB

(71) Applicant *(for all designated States except US)*: **RADIATION WATCH LIMITED** [GB/GB]; Greenhills House, Havenstreet, Isle of Wight P033 4DT (GB).

(72) Inventors; and

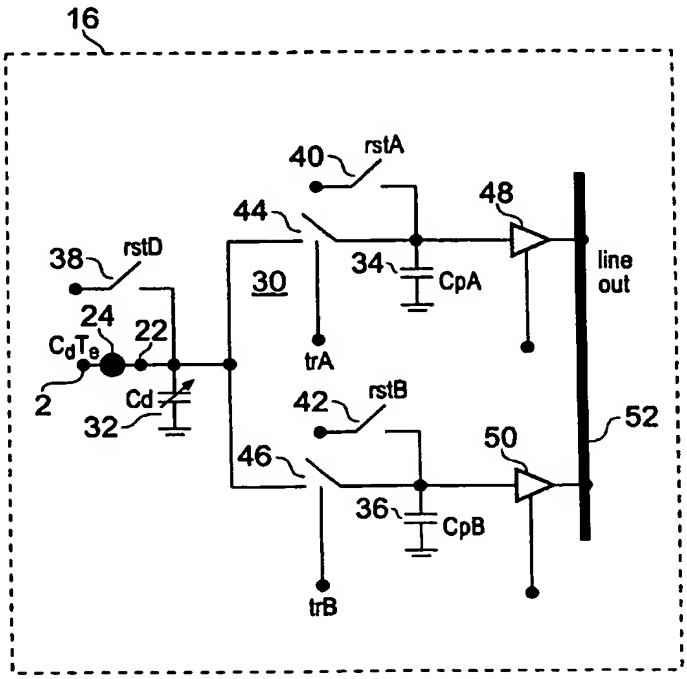
(75) Inventors/Applicants *(for US only)*: **DOUGHTY, Peter, Trevor** [GB/GB]; 60 Edward Road, Clevedon, Bristol BS21 7DX (GB). **ANDERSON, Michael, John** [GB/GB]; Greenhills, Havenstreet, Isle of Wight P033 4DT (GB). **PRENDERGAST, David, Jeremy** [GB/GB]; 13 Trustwell Road, Crookes, Sheffield S10 1WH (GB). **BENSON, Ian** [GB/GB]; 170B Reading Road South, Church Crookham, Surrey GU52 6AR (GB). **MORGAN, Russell** [GB/GB]; 42 Hurstville Drive, Waterlooville, Portsmouth PO7 7NE (GB).

(74) Agents: **POTTER, Julian, Mark,** et al.; Mintz Levin Cohn Ferris Glovsky and Popeo Intellect, ual Property LLP, The Rectory, 9 Ironmonger Lane, London EC2V 8EY (GB).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: IONISING RADIATION DETECTOR



(57) Abstract: An assembly (13) for monitoring ionising radiation comprises a detector substrate (2) for generating electronic charge responsive to incident ionising radiation, the detector substrate (2) having an array of ionising radiation sense volumes (12) formed in it. A circuit substrate (14) supporting an array of read-out circuits (16) corresponding to the array of sense volumes is mechanically and electrically coupled to the detector substrate (14). Each of the read-out circuits (16) is switchable between first and second charge integration modes for receiving charge from a corresponding sense volume. A charge integration circuit (30) is configured in the first charge integration mode to integrate charge corresponding to sensing of a single ionising radiation detection event in a corresponding sense volume and in the second charge integrating mode to integrate charge corresponding to sensing a plurality of ionising radiation detection events in the corresponding sense volume. In another embodiment the read-out circuitry includes photon-counting circuitry (140).

WO 2005/008286 A3

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) **Date of publication of the international search report:**
31 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.